What is claimed is:

1. A viscous fluid transfer apparatus for forming a flat viscous fluid transfer surface for transferring viscous fluid to a connecting terminal of an electronic component, said viscous fluid transfer apparatus comprising:

a transfer unit including a planar pan surface for putting a viscous fluid thereon;

a squeegee unit including a stirring squeegee shaped planar for stirring said viscous fluid put on said pan surface, a leveling squeegee shaped planer for uniformly flattening said viscous fluid which is stirred, and a squeegee fixing member serving to separate said stirring squeegee and said leveling squeegee from each other and to fix them in parallel, wherein both ends of said fixing member are supported pivotally and rockably above said transfer unit;

a transfer unit moving mechanism for reciprocating said transfer unit such that said stirring squeegee and said leveling squeegee are relatively moved each other along said planar pan surface of said transfer unit; and

a squeegee driving mechanism for rocking said squeegee unit such that said stirring squeegee approaches said pan surface on going path of said stirring squeegee and said leveling squeegee approaches said pan surface on returning path of said leveling squeegee.

2. The viscous fluid transfer apparatus according to claim 1, further comprising:

protrusions formed on a pan surface side of both ends in a longitudinal direction of said stirring squeegee,

wherein said protrusions scrape said viscous fluid put on said pan surface toward a central side in the longitudinal direction of said stirring squeegee.

3. The viscous fluid transfer apparatus according to claim 2,

wherein said protrusion of said stirring squeegee has a taper face inclined in such a manner as a front side of said taper face in a direction of progress of said stirring squeegee is shorter than a back side of said taper face within a thickness of said stirring squeegee,

wherein the inclination of said taper face causes a passage for said viscous fluid rearward to be narrow in a back side of a direction of progress of said stirring squeegee.

4. The viscous fluid transfer apparatus according to claim 2, further comprising:

an intermediate protrusion provided between said protrusions on both ends of said stirring squeegee,

wherein said intermediate protrusion forms said

viscous fluid put on said pan surface like a band.

5. The viscous fluid transfer apparatus according to claim 4,

wherein said intermediate protrusion of said stirring squeegee has a taper face inclined in such a manner as a front side of said taper face in a direction of progress of said stirring squeegee is shorter than a back side of said taper face within a thickness of said stirring squeegee,

wherein the inclination of said taper face causes a passage for said viscous fluid rearward to be narrow in a back side of a direction of progress of said stirring squeegee.

6. The viscous fluid transfer apparatus according to claim 1,

wherein a concave sectional curved portion and a convex sectional curved portion are sequentially formed on the pan surface side of the leveling squeegee from the front part in the direction of progress of the squeegee.

7. The viscous fluid transfer apparatus according to claim 1,

wherein a tip on the pan surface side of the leveling squeegee is formed to have a V-shaped section.

8. The viscous fluid transfer apparatus according to claim 7, further comprising:

a corner portion shaped an obtuse angle and formed in a inclined surface on a front part in a direction of progress of said leveling squeegee;

wherein said corner portion is protruded outward and formed over a longitudinal direction of said leveling squeegee.

9. The viscous fluid transfer apparatus according to claim 1, further comprising:

a pressure generating member provided in a longitudinal direction of said leveling squeegee in the vicinity of a tip on said pan surface side at the front part in the direction of progress of said leveling squeegee,

wherein said pressure generating member forms a narrow path through which said viscous fluid flows between said pan surface and said pressure generating member, when said leveling squeegee moves; and

wherein said pressure generating member forms a passage for said viscous fluid between said leveling squeegee and said pressure generating member, while said leveling squeegee is moving.

10. The viscous fluid transfer apparatus according to

claim 1,

wherein a length of said stirring squeegee is equal to or greater than a scraping width of said leveling squeegee.

11. The viscous fluid transfer apparatus according to claim 1, further comprising;

stepped portions provided on said pan surface of said transfer unit at both ends in a direction that said leveling squeegee is across said transfer unit, and provided along a direction of the movement of said leveling squeegee,

wherein said stepped portion is protruded from said pan surface by a predetermined height in order to support both ends of said leveling squeegee in hanging down.

12. The viscous fluid transfer apparatus according to claim 1, further comprising:

stepped portions provided on both ends of said leveling squeegee in a longitudinal direction of said leveling squeegee at said pan surface side,

wherein said stepped portion is protruded by a predetermined height.

13. The viscous fluid transfer apparatus according to claim 1,

wherein said squeegee driving mechanism includes:

a rocking arm having a first end fixed to a rocking center shaft of the squeegee fixing member and a second end connected to a horizontal driving mechanism for rocking the squeegee fixing member; and

an arm stopper for contacting on the rocking arm to control a rocking angle of the rocking arm.

14. The viscous fluid transfer apparatus according to claim 1, further comprising:

a V block holding said squeegee fixing member on a first end side of said squeegee fixing member; and

a table having a projection and supporting said squeegee fixing member on a second end side of said squeegee fixing member by said projection,

wherein said squeegee fixing member includes:

a cylindrical pin in an axial direction to one of end side in a longitudinal direction of said squeegee fixing member; and

an engagement member having a key groove parallel with the axial direction is provided on the other end side of said squeegee fixing member,

wherein said projection engaged with said key groove, and

wherein said squeegee unit is supported removably by said V block, said table and said squeegee fixing member.

15. A viscous fluid transfer apparatus for forming a flat viscous fluid transfer surface in order to transfer a viscous fluid to a connecting terminal of an electronic component, comprising:

a belt conveyer including a planar belt surface on which the viscous fluid is to be put;

a squeegee for uniformly flattening the viscous fluid put on the belt surface by a delivery operation of the belt conveyer; and

a stirring mechanism provided in a front stage of the squeegee in a direction of delivery of the belt conveyer and serving to stir the viscous fluid on the belt surface.

16. A viscous fluid transfer method of forming a flat viscous fluid transfer surface by a squeegee and immersing a terminal portion of an electronic component in the viscous fluid transfer surface, thereby transferring a viscous fluid to the electronic component, said method comprising the steps of:

putting said viscous fluid on a transfer unit having a flat pan surface;

stirring said viscous fluid by a plate-shaped stirring squeegee after said viscous fluid is put on said transfer unit; and

forming a viscous fluid transfer surface by flattening said viscous fluid uniformly after said viscous fluid is stirred by a plate-shaped leveling squeegee,

wherein said stirring squeegee is relatively moved with respect to the pan surface in a forward direction during stirring said viscous fluid, and

wherein a plate-shaped leveling squeegee is moved relatively with respect to the pan surface in a reverse direction during flattening said viscous fluid.

17. The viscous fluid transfer method according to claim 16, further comprising the step of:

scraping said viscous fluid toward to a central side in the longitudinal direction of said leveling squeegee by said stirring squeegee when said stirring squeegee is relatively moved with respect to the pan surface in a forward direction again after forming a viscous fluid transfer surface,

wherein said viscous fluid overflows from both ends in a longitudinal direction of said leveling squeegee when said leveling squeegee is relatively moved with respect to the pan surface in a reverse direction.

18. The viscous fluid transfer method according to claim 16,

wherein a thickness of said viscous fluid transfer

surface formed on said transfer unit is set by regulating a height of a rise of said leveling squeegee from said pan surface of said transfer unit.

19. The viscous fluid transfer method according to claim 18,

wherein said height of the rise from said pan surface is regulated by causing said leveling squeegee to contact on said pan surface of said transfer unit over a whole width and setting a position of contacting said pan surface to be a reference height.

20. The viscous fluid transfer method according to claim 16,

wherein said thickness of said viscous fluid transfer surface is set by a height of protrusion of stepped portions provided on said pan surface side on both ends of said leveling squeegee in the longitudinal direction of said leveling squeegee.

21. A viscous fluid transfer method of forming a flat viscous fluid transfer surface by a squeegee and immersing a terminal portion of an electronic component in the viscous fluid transfer surface, thereby transferring a viscous fluid to the electronic component, said method comprising the steps of:

putting said viscous fluid on a belt surface of a belt conveyer while said viscous fluid is stirred, and

forming a viscous fluid transfer surface caused by leveling said viscous fluid flatly by a squeegee with a carriage operation of said belt conveyer,

wherein said squeegee is provided above said belt surface.

22. An electronic component mounting apparatus for sucking and holding an electronic component and mounting the electronic component into a predetermined mounting position, said apparatus comprising:

an electronic component supply device for supplying a plurality of electronic components to supply a desirable one of said electronic components;

a sucking nozzle for removably sucking and holding said electronic component;

an attachment head for holding said sucking nozzle to rise and fall freely;

a head moving device for moving said attachment head in a horizontal plane; and

a viscous fluid transfer device for forming a flat viscous fluid transfer surface for transferring viscous fluid to a connecting terminal of an electronic component and for uniformly flattening a viscous fluid on a transfer unit to form a flat viscous fluid transfer surface,

wherein said viscous fluid transfer device including a transfer unit having a planar pan surface for putting a viscous fluid thereon, a squeegee unit having a stirring squeegee shaped planar for stirring said viscous fluid put on said pan surface, a leveling squeegee shaped planer for uniformly flattening said viscous fluid which is stirred, and a squeegee fixing member serving to separate said stirring squeegee and said leveling squeegee from each other and to fix them in parallel, wherein both ends of said fixing member are supported pivotally and rockably above said transfer unit, a transfer unit moving mechanism for reciprocating said transfer unit such that said stirring squeegee and said leveling squeegee are relatively moved each other along the planar pan surface of said transfer unit, and a squeegee driving mechanism for rocking said squeegee unit such that said stirring squeegee approaches said pan surface on going path of said stirring squeegee and said leveling squeegee approaches said pan surface on returning path of said leveling squeegee,

wherein said electronic component sucked by said electronic component supply member is moved onto said transfer unit of said viscous fluid transfer device and a terminal portion of said electronic component is immersed in said viscous fluid transfer surface by said up-down operation of said attachment head, thereby transferring said viscous fluid to said electronic component.

23. The electronic component mounting apparatus according to claim 22,

wherein said attachment head includs:

a rubber pad provided in a tip portion of said sucking nozzle and having a sucking surface which can be inclined freely and can be expanded and contracted freely in a direction of suction; and

a sucking attitude correcting member provided around said rubber pad in which a tip portion has a contact face to contact on a rear face of said electronic component during said suction of the electronic component.

24. The electronic component mounting apparatus according to claim 23,

wherein said sucking attitude correcting member is constituted of a pair of rod bodies provided on both sides of said rubber pad.

25. The electronic component mounting apparatus according to claim 23 ,

wherein said contact face of said sucking attitude correcting member is formed to be inclined from a horizontal plane.

26. The electronic component mounting apparatus

according to claim 22 further comprising:

a multi-head having a plurality of said attachment heads arranged in parallel, and

wherein said transfer unit of said viscous fluid transfer device including a pan surface having a greater width than that of said multi-head.

27. The electronic component mounting apparatus according to claim 26,

wherein the transfer unit includes a pan surface having a greater width than a double of the width of the multi-head.

28. An electronic component mounting method of mounting an electronic component in a predetermined mounting position, comprising the steps of:

sucking an electronic component by an attachment head having a sucking nozzle, while uniformly flattening a viscous fluid on a transfer unit having a planar pan surface to form a viscous fluid transfer surface;

moving the sucked attachment head of the electronic component to an upper position of the viscous fluid transfer surface;

bringing down the sucking nozzle until a terminal portion of the electronic component is immersed in the viscous fluid transfer surface;

raising the sucking nozzle after transferring the viscous fluid to the electronic component and moving the attachment head to a predetermined mounting position; and

bringing down the sucking nozzle in the mounting position, thereby mounting the electronic component.

29. The electronic component mounting method according to claim 28,

wherein said sucking nozzles of a multi-head including a plurality of attachment heads arranged in parallel are controlled to be brought up and down at the same time.

30. The electronic component mounting method according to claim 28,

wherein a height of said viscous fluid transfer surface of said transfer unit is detected before the viscous fluid is transferred to the electronic component, and an amount of bringing down the sucking nozzle of the attachment head is set according to the detected height of said viscous fluid transfer surface of said transfer unit.

31. The electronic component mounting method according to claim 28,

wherein said viscous fluid transfer surface is formed in a predetermined thickness on said transfer unit

and said terminal portion of said electronic component is pushed to contact on the pan surface of the transfer unit, thereby transferring the viscous fluid having the predetermined thickness to the electronic component.

32. The electronic component mounting method according to claim 28,

wherein the viscous fluid is transferred to a second electrical component, and

33. The electronic component mounting method according to claim 32, further comprising the steps of:

detecting a reference mark for alignment provided on a rear face of said first electronic component,

correcting a mounting position of said second electronic component by setting said reference mark as a reference.

34. A semiconductor device comprising a plurality of solder balls arranged as connecting terminals on a mounting surface side,

wherein a land for terminal connection is provided in a position corresponding to the connecting terminal of the semiconductor device on a rear face opposite to the mounting surface side.

35. The semiconductor device according to claim 34, wherein the connecting terminal of the semiconductor device is formed by such a manner that a solder is fixed to a heat-resistant pin.

36. The semiconductor device according to claim 34, wherein a reference mark for alignment is provided on the rear face opposite to the mounting surface side.